REMARKS

Claims 1-29, and 31-33, as amended, are pending in this application. In this Response, Applicants have amended certain claims. In light of the Office Action, Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.

In particular, independent claims 1, 19, and 27 have been rewritten to further clarify the invention. Claim 1, for example, has been rewritten to further clarify that the binder is applied to the hoop-stress material before it is wound onto a core instead of applying it to the outer surface of the hoop-stress layer. As no new matter has been added by the amendments herein, Applicants respectfully request entry of these amendments at this time.

Brief Description of the Present Invention

The present invention is directed to a golf ball formed with an improved hoop-stress layer. As recited in the claims, the hoop-stress layer is a thread or winding formed from a hoop stress material that is coated with a binding material. The hoop stress material may have an elastic modulus of about 10,000 kpsi or more and may be formed from glass, aromatic polyamides, carbon, metal, shape memory alloy, natural fiber, and mixtures thereof. *See, e.g.*, claim 19.

Unlike dipping or spray coating a layer of material over a wound core as described in the references relied upon by the Examiner, however, the present invention is directed toward applying a binder material to the hoop-stress material before it is disposed on the core. *See, e.g.*, independent claims 1, 19, and 27. Once the hoop stress material is wound onto a core to form a hoop-stress layer, the binder may be activated so that the cross-sectional area of the winding or thread expands or increases. Claim 1, for instance, states that the cross-sectional area increases by about 5 percent or greater. As explained below, none of the references relied upon by the Examiner discloses these features of the invention.

THE REJECTIONS UNDER 35 U.S.C. § 103

The Rejection Based on Aoyama '801, Umezawa '968, and Morgan '296

The Examiner rejected claims 1-4, 6-8, 10-15, 19-23, 26-30, and 33 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,713,801 to Aoyama in view of U.S. Patent No. 5,993,968 to Umezawa *et al.* or U.S. Patent No. 6,030,296 to Morgan *et al.* for the reasons stated

on pages 3-5 of the Office Action. Applicants respectfully request the Examiner reconsider and withdraw this rejection at least on the grounds that (1) none of the references teaches or suggests applying a binding material prior to winding or disposing the hoop-stress layer about the core, and (2) none of the references teaches or suggests increasing the cross-sectional area of the hoop stress material by activating the binder.

The primary reference relied upon by the Examiner, namely Aoyama, is directed to a golf ball having a solid core, a wound layer of high tensile elastic modulus, and a cover. *See, e.g.*, Col. 2, lines 41-48. The Examiner does not rely on Aoyama either for the feature of a binding applied to the hoop-stress material or for increasing the cross-sectional area by activating a binder.

The Examiner cited Umezawa and Morgan in an attempt to cure the deficiencies of Aoyama with respect to certain material properties and layer construction, including the two features described above. But neither reference provides any teaching or suggestion of applying a binding material prior to winding or disposing the hoop-stress layer about the core. Instead, both references teach only to form a layer over an already wound golf ball core. Umezawa teaches to dip or spray a urethane dispersion onto a wound core (col. 6, lines 25-28), and Morgan teaches to submerse a wound core in latex.

Because neither reference teaches or suggests this claimed feature, they also fail to provide any disclosure regarding a hoop-stress material having an increased cross-sectional area from activating the binder, as recited for instance in claim 1. At best, these references may disclose adding thickness to the ball by adding material on top of a wound layer. But adding an additional layer of material on top of a winding does not increase the cross-sectional area of the winding.

For at least these reasons, Applicants respectfully submit that no combination of Aoyama, Umezawa, and Morgan renders obvious the pending claims.

Moreover, Applicants also submit that the three cited references would not be combined by a skilled artisan in the manner suggested by the Examiner absent the improper use of hindsight. There are many significant differences between Aoyama, Umezawa, and Morgan that would prevent their combination. For example, while Umezawa and Morgan both generally disclose rubber windings, but both are silent as to the use of non-rubber winding materials. *See, e.g.*, Umezawa '968 at col. 8, lines 18-34 (polyisoprene rubber and natural rubber), and Morgan '296 at col. 6, lines 15-21 (solid rubber and cured latex rubber). The winding materials taught by Aoyama are very different from the materials suggested by the secondary references.

Also, the tensile modulus of rubber threads of Umezawa and Morgan is typically several magnitudes lower than the threads discussed in Aoyama.

Furthermore, Aoyama clearly states that it is preferred that the cover is "in direct contact with the wound layer." Col. 3, lines 23-25. In contrast, Umezawa expressly teaches to "protect" the windings by applying a urethane dispersion over them before molding the cover. The MPEP makes clear that a reference cannot be modified or combined in a manner that would render it unsatisfactory for its intended purpose. *See* MPEP § 2143.01 at 2100-124-25 ("If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."). This guiding principle can not be fulfilled by the modifications suggested by the Examiner.

Simply stated, it is not possible to ignore these distinct and significant differences between the references without using the instant application as a template from which to pick and choose. This is, of course, an impermissible use of hindsight.

Applicants further disagree with the Examiner's grounds for rejecting dependent claims 2-4, 6-8, 10-15, 20-23, 26, 28-29, and 33. For the sake of brevity, however, Applicants have not addressed each specific rejection. As required by MPEP § 2144.03, however, Applicants contest the Examiner's reliance on Official Notice in his rejections and would discuss this matter further should the Examiner still find that the independent claims are not patentable over the cited references.

The Rejection Based on Aoyama '801, Umezawa '968, Morgan '296, and Boehm '100

The Examiner rejected claims 9, 16-18, 24-25, and 32 under § 103(a) as being obvious over the three references discussed above in further view of U.S. Patent No. 5,919,100 to Boehm *et al.* for the reasons stated on page 5 of the Office Action. Applicants respectfully traverse this rejection.

The Examiner cited Boehm in an attempt to remedy the stated deficiencies of Aoyama, Umezawa, and Morgan. But Boehm does not teach or suggest the missing features of the present invention discussed above. Boehm also is completely silent as to the requisite core layer of resilient elastomeric material, the wound hoop-stress layer, and the binding material presently recited. Instead, Boehm generally describes a solid, non-wound core portion made of at least a first, solid, non-wound layer 20 surrounding the fluid filled center and a second, solid, non-wound layer 22 surrounding the first layer 20. *See, e.g.*, Col. 7, lines 14-25

and 36-40. In light of Boehm's silence as to a hoop-stress layer, it follows that the reference is also completely silent as to using a binding material as a coating for the strand(s) of the hoop-stress layer.

Because there is no disclosure or suggestion of a solid core, a hoop-stress layer, or a binding material in Boehm, a skilled artisan would not have had any motivation to combine Boehm's thermoset materials with Aoyama's high tensile elastic modulus wound layer or with the rubber thread layer of Umezawa or Morgan to arrive at the present invention. For the reasons already provided, even if there were such motivation there would still be several claimed features not taught or suggested by any of the references. Therefore, Applicants respectfully submit that Boehm does not cure the deficiencies of Aoyama, Umezawa, Morgan, or combinations thereof.

The Rejection Based on Aoyama '801, Umezawa '968, Morgan '296, and Maehara '736

Finally, claims 5 and 31 were rejected under § 103(a) as being obvious over the references applied in claim 1, and further in view of U.S. Patent No. 5,913,736 to Maehara *et al.* Once again, no combination of the cited references render obvious the claims, as presently recited.

The Examiner cited Maehara simply for its disclosure of shape memory alloy, but this reference is completely silent as to any type of binding material applied to the shape memory alloy or as to increasing the cross-sectional area of a hoop-stress material. And, for the same reasons as discussed above, a skilled artisan would not have been motivated to modify and combine Maehara's shape memory alloy layer with Aoyama, Umezawa, or Morgan absent guidance from the present invention. In short, a skilled artisan would have no motivation to combine Maehara with any other cited reference, and even if such a combination were made the result would once again fall short of the present invention.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal thereof as to this rejection.

CONCLUSION

All claims are believed to be in condition for allowance. If the Examiner believes that the present amendments still do not resolve all of the issues regarding patentability of the pending claims, Applicants invite the Examiner to contact the undersigned attorneys to discuss any remaining issues.

No fees are believed to be due at this time. Should any fee be required, however, please charge such fee to Swidler Berlin Shereff Friedman, LLP Deposit Account No. 195127, Order No. 20002.0031.

Respectfully submitted,
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Dated: January 6, 2003

By: _____

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APPENDIX A

MARKED UP VERSION OF AMENDED CLAIMS

Please cancel claims 5 and 30 and amend the claims as follows:

1. (Amended) A golf ball having three or more concentrically disposed layers, which comprises:

a core of at least one layer comprising at least one resilient elastomeric material;

a hoop-stress layer wound or wrapped about the core comprising:

at least one hoop-stress material having a tensile elastic modulus of about 10,000 kpsi or greater and a first cross-sectional area, and [wherein]

a binding material [is] applied to the at least one hoop-stress material prior to winding the hoop-stress material about the core and activated to increase first cross-sectional area by about 5 percent or greater; and

an outermost thermoset material of at least one layer disposed about the hoop-stress layer.

19. (Amended) A golf ball having four or more concentrically disposed layers, which comprises:

a core of at least one layer comprising at least one resilient elastomeric material;

a hoop-stress layer comprising at least one wound material selected from the group consisting of glass, aromatic polyamides, carbon, metal, shape memory alloy, natural fiber, and mixtures thereof having a tensile elastic modulus of about 10,000 kpsi or greater, disposed about the core, wherein the at least one wound material forming the hoop-stress layer has a first cross-sectional area and is coated with a binding material prior to winding to create a second cross-sectional area greater than the first; and

an outermost thermoset material of at least one layer, having a dimpled outer surface, disposed about the hoop-stress layer.

27. (Amended) A golf ball comprising:

a core comprising at least one resilient elastomeric material;

a hoop-stress layer disposed about the core comprising at least one strand having a first cross-sectional area;

a binding material applied to the at least one strand prior to disposing the hoop-stress layer about the core to increase the first cross-sectional area by about 5 percent or greater; and

a cover comprising at least one thermoset material.